# UNIVERSIDAD DE CASTILLA - LA MANCHA

# GUÍA DOCENTE

## 1. General information

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|---|---|---|---|
| **Course:** | DESIGN WORK: DESIGN, SIZE AND OPERATION OF A TRANSPORT INFRASTRUCTURE AND INTEGRATION ENVIRONMENT | **Code:** | 310817 |
| **Type:** | ELECTIVE | **ECTS credits:** | 6 |
| **Degree:** | 2343 - MASTERS DEGREE PROGRAMME IN ENGINEERING OF ROADS, CANALS AND PORTS | **Academic year:** | 2023-24 |
| **Center:** | 603 - E.T.S. CIVIL ENGINEERS OF CR | **Group(s):** | 20 |
| **Year:** | 2 | **Duration:** | First semester |
| **Main language:** | English | **Second language:** | Spanish |
| **Use of additional languages:** | | **English Friendly:** | N |
| **Web site:** | | **Bilingual:** | N |

Lecturer: **JOSE MARIA CORONADO TORDESILLAS** - Group(s): **20**

| Building/Office | Department | Phone number | Email | Office hours |
|---|---|---|---|---|
| ETSI Caminos/ 2-D47 | INGENIERÍA CIVIL Y DE LA EDIFICACIÓN | 926052404 | josemaria.coronado@uclm.es | Mon and Tue: 16:00 to 19:00. In any case, the student should ask for an appointment by email. |

Lecturer: **MARIA AMPARO MOYANO ENRIQUEZ DE SALAMANCA** - Group(s): **20**

| Building/Office | Department | Phone number | Email | Office hours |
|---|---|---|---|---|
| ETSI Caminos/ 2-D49 | INGENIERÍA CIVIL Y DE LA EDIFICACIÓN | 926051930 | Amparo.Moyano@uclm.es | Wed and Thu: 11:30 to 14:30. In any case, the student should ask for an appointment by email. |

Lecturer: **ANA MARIA RIVAS ALVAREZ** - Group(s): **20**

| Building/Office | Department | Phone number | Email | Office hours |
|---|---|---|---|---|
| Politécnico 2-A49 | INGENIERÍA CIVIL Y DE LA EDIFICACIÓN | 926051938 | ana.rivas@uclm.es | Mon, Tue and Thu: 16:00 to 19:00. In any case, the student should ask for an appointment by email. |

Lecturer: **SANTOS SANCHEZ CAMBRONERO GARCIA MORENO** - Group(s): **20**

| Building/Office | Department | Phone number | Email | Office hours |
|---|---|---|---|---|
| Politécnico /2-A47 | INGENIERÍA CIVIL Y DE LA EDIFICACIÓN | 926052819 | santos.sanchez@uclm.es | Mon, Tue and Fri: 12:00 to 14:00. In any case, the student should ask for an appointment by email. |

## 2. Pre-Requisites

Not established

## 3. Justification in the curriculum, relation to other subjects and to the profession

Not established

## 4. Degree competences achieved in this course

**Course competences**

| Code | Description |
|---|---|
| CB06 | Possess and understand knowledge that provides a basis or opportunity to be original in the development and / or application of ideas, often in a research context. |
| CB07 | Apply the achieved knowledge and ability to solve problems in new or unfamiliar environments within broader (or multidisciplinary) contexts related to the area of study |
| CB08 | Be able to integrate knowledge and face the complexity of making judgments based on information that, being incomplete or limited, includes reflections on social and ethical responsibilities linked to the application of knowledge and judgments |
| CB09 | Know how to communicate the conclusions and their supported knowledge and ultimate reasons to specialized and non-specialized audiences in a clear and unambiguous way |
| CB10 | Have the learning skills which allow to continue studying in a self-directed or autonomous way |
| G01 | Scientific-technical and methodological capacity for the continuous recycling of knowledge and the exercise of the professional functions of consultancy, analysis, design, calculation, project, planning, leadership, management, construction, maintenance, conservation and exploitation in the fields of civil engineering. |
| G02 | Understanding of the multiple technical, legal and property constraints that arise in the design of a public work, and the capacity to establish different valid alternatives, to choose the optimum one and to express it adequately, anticipating the problems of its construction, and using the most suitable methods and technologies, both traditional and innovative, with the aim of achieving the greatest efficiency and promoting the progress and development of a sustainable and respectful society with the environment. |
| G03 | Knowledge, understanding and ability to apply the necessary legislation in the exercise of the profession of Civil Engineer. |
| G04 | Knowledge of the history of civil engineering and ability to analyse and assess public works in particular and the construction industry in general. |
| G05 | Knowledge of the Civil Engineering profession and the activities that can be carried out in the field of civil engineering. |
| G06 | Ability to plan, design, inspect and manage land (roads, railways, bridges, tunnels and urban roads) or sea (port works and facilities) transport infrastructures. |
| G07 | Knowledge to apply technical and managerial skills in R&D&I activities in the field of civil engineering. |
| G18 | Ability to participate in research projects and scientific and technological collaborations within its thematic area, in interdisciplinary contexts and, where appropriate, with a high knowledge transfer component. |
| G25 | Ability to identify, measure, enunciate, analyse, diagnose and scientifically and technically describe a civil engineering problem |

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|---|---|
| G27 | Ability to communicate in a second language. |
| G28 | Ability to work in an international context. |
| G29 | Management capacity and teamwork. |
| ITUOT2 | Capacity to understand and anticipate the implications of a transport infrastructure in its environment - access, changes in use, mobility and to lay the foundations of an urban development operation in parallel with its construction. |
| ITUOT3 | Knowledge, understanding and design capability of nodes and connectors in a transport infrastructure. |
| ITUOT4 | Capacity to estimate the demand to be met in defined periods of time in a transport infrastructure, management of the sizing tools of the areas of action according to the demand needs and the optimization tools that allow the activity of the operating companies providing the services to be coordinated. |
| ITUOT5 | Ability to identify and define the roles of those involved in the operation of a transport infrastructure, to establish the characteristics and operational guidelines of a body responsible for the integrated management of its operation and maintenance and to assess the economic aspects associated with the operation of the services provided by each operator. |
| TE08 | Knowledge of transport engineering and planning, transport functions and modes, urban transport, management of public transport services, demand, costs, logistics and financing of transport infrastructure and services. |
| TE09 | Ability to analyse and diagnose the social, cultural, environmental and economic factors of a territory, as well as to carry out spatial and urban planning projects from the perspective of sustainable development. |
| TE10 | Capacity for planning, management and operation of civil engineering related infrastructures. |
| TE11 | Ability to analyse the environmental factors involved in an engineering action |
| TE12 | Ability to assess the impact an engineering work can have on the environment and to define appropriate corrective measures. |

## 5. Objectives or Learning Outcomes

**Course learning outcomes**

Description

Students can identify and evaluate the economic aspects associated with the operation of the services provided by each operator.

Students can define the characteristics and operating guidelines of a body responsible for the integrated management of the operation and maintenance of a transport infrastructure.

Students can design the public space around the access nodes to the transport infrastructure.

Students identify the environmental factors and assess the environmental impact associated with the operation of a transport infrastructure.

Students can estimate the real estate needs and arrange the urban spaces around the access nodes to the transport infrastructure.

Students can analyze the opportunities for the development of activities in the public and private space surrounding a transport infrastructure.

Students know and understand the design of nodes and connectors of a transportation infrastructure hub.

Students know and are familiar with the use of tools for planning the areas of action of a transport infrastructure according to demand needs.

Students use optimization tools that allow them to coordinate the activity of the operating companies providing the services.

Students can estimate the demand to be met at defined periods in a transport infrastructure.

Students know how to identify and define the roles of those involved in their operation.

## 6. Units / Contents

**Unit 1: Analysis of transport infrastructure location and its surroundings**

**Unit 2: Analysis of the transport infrastructure impacts. Similar case studies**

- **Unit 2.1** Keys for the design of transport infrastructures
- **Unit 2.2** Main stakeholders' roles

**Unit 3: Proposal for a new intermodal transport hub design**

- **Unit 3.1** Operation areas linked to the transport infrastructure
- **Unit 3.2** Exploitation and management coordination
- **Unit 3.3** Economic aspects related to the exploitation phase
- **Unit 3.4** Defining processes for exploitation and management

**Unit 4: Proposal for the urban planning and public space design in the transport hub surroundings**

- **Unit 4.1** Streets' patterns
- **Unit 4.2** Pedestrian and cyclists mobility
- **Unit 4.3** Land uses in the hub surroundings
- **Unit 4.4** Building typologies
- **Unit 4.5** Public space design

## 7. Activities, Units/Modules and Methodology

| Training Activity | Methodology | Related Competences (only degrees before RD 822/2021) | ECTS | Hours | As | Com | Description |
|---|---|---|---|---|---|---|---|
| Class Attendance (theory) [ON-SITE] | Project/Problem Based Learning (PBL) | CB06 CB07 CB08 CB09 CB10 G01 G02 G03 G04 G05 G06 G07 G18 G25 G27 G28 G29 ITUOT2 ITUOT3 ITUOT4 ITUOT5 TE08 TE09 TE10 TE11 TE12 | 0.48 | 12 | N | - | Seminars about topics related to the project |
| Class Attendance (practical) [ON-SITE] | project-based learning | CB06 CB07 CB08 CB09 CB10 G01 G02 G03 G04 G05 G06 G07 G18 G25 G27 G28 G29 ITUOT2 ITUOT3 ITUOT4 ITUOT5 TE08 TE09 TE10 TE11 TE12 | 1.16 | 29 | N | - | Work in class for developing the tasks of the project |
| | | CB06 CB07 CB08 CB09 | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project or Topic Presentations [ON-SITE] | project-based learning | CB10 G01 G02 G03 G04 G05 G06 G07 G18 G25 G27 G28 G29 ITUOT2 ITUOT3 ITUOT4 ITUOT5 TE08 TE09 TE10 TE11 TE12 | 0.16 | 4 | Y | Y | Presentation of the project progress and partial achievements (analysis of similar case studies and diagnosis of the analysis). Retrievable activity. |
| Writing of reports or projects [OFF-SITE] | project-based learning | CB06 CB07 CB08 CB09 CB10 G01 G02 G03 G04 G05 G06 G07 G18 G25 G27 G28 G29 ITUOT2 ITUOT3 ITUOT4 ITUOT5 TE08 TE09 TE10 TE11 TE12 | 4.2 | 105 | Y | Y | Partial submissions and final poster ellaboration including the whole proposal. Retrievable activity. |
| | | **Total:** | **6** | **150** | | | |
| | | **Total credits of in-class work: 1.8** | | | | | **Total class time hours: 45** |
| | | **Total credits of out of class work: 4.2** | | | | | **Total hours of out of class work: 105** |

As: Assessable training activity
Com: Training activity of compulsory overcoming (It will be essential to overcome both continuous and non-continuous assessment).

## 8. Evaluation criteria and Grading System

| Evaluation System | Continuous assessment | Non-continuous evaluation* | Description |
|---|---|---|---|
| Assessment of problem solving and/or case studies | 60.00% | 60.00% | Partial submissions during the course and final poster of the project. Minimum grade required in each one: 4.0 |
| Oral presentations assessment | 40.00% | 40.00% | Final presentation of the project and debate. Minimum grade required: 4.0 |
| **Total:** | **100.00%** | **100.00%** | |

*According to art. 4 of the UCLM Student Evaluation Regulations, it must be provided to students who cannot regularly attend face-to-face training activities the passing of the subject, having the right (art. 12.2) to be globally graded, in 2 annual calls per subject , an ordinary and an extraordinary one (evaluating 100% of the competences).*

**Evaluation criteria for the final exam:**

**Continuous assessment:**

The final grade of the course must be greater or equal to 5.0, and it will be obtained using the percentages assigned for the different activities included in the continuous evaluation system.
Unless stated otherwise, continuous evaluation criteria will be applied to all students.
Anyone choosing non-continuous assessment must follow the official process to inform about it. This option is only available if the student's participation in evaluation activities (from the continuous assessment) has not reached 50% of the total evaluation for the subject.

**Non-continuous evaluation:**

The final grade of the course must be greater or equal to 5.0, and it will be obtained using the percentages assigned for the different activities included in the non-continuous evaluation system. The evaluation activities in the non-continuous evaluation system will be the same as in the continuous system, but in this case the student should elaborate them individually and submit them in the specific dates established at the beginning of the course.

**Specifications for the resit/retake exam:**

Every student is evaluated in the same way than in the final exam assessment (for both continuous or non-continuous evaluation), considering the same weighting percentages for getting the final grade.

**Specifications for the second resit / retake exam:**

In this case, every student is evaluated using the same criteria and weighting percentages established in the non-continuous evaluation.

## 9. Assignments, course calendar and important dates

| **Not related to the syllabus/contents** | |
|---|---|
| **Hours** | **hours** |
| Project or Topic Presentations [PRESENCIAL][project-based learning] | 1.5 |
| **Unit 1 (de 4): Analysis of transport infrastructure location and its surroundings** | |
| **Activities** | **Hours** |
| Class Attendance (practical) [PRESENCIAL][project-based learning] | 9 |
| Project or Topic Presentations [PRESENCIAL][project-based learning] | 1.5 |
| Writing of reports or projects [AUTÓNOMA][project-based learning] | 25 |
| **Unit 2 (de 4): Analysis of the transport infrastructure impacts. Similar case studies** | |
| **Activities** | **Hours** |
| Class Attendance (theory) [PRESENCIAL][Project/Problem Based Learning (PBL)] | 4 |
| Class Attendance (practical) [PRESENCIAL][project-based learning] | 4 |
| Writing of reports or projects [AUTÓNOMA][project-based learning] | 20 |
| **Unit 3 (de 4): Proposal for a new intermodal transport hub design** | |
| **Activities** | **Hours** |
| Class Attendance (theory) [PRESENCIAL][Project/Problem Based Learning (PBL)] | 4 |
| Class Attendance (practical) [PRESENCIAL][project-based learning] | 8 |
| Project or Topic Presentations [PRESENCIAL][project-based learning] | .5 |
| Writing of reports or projects [AUTÓNOMA][project-based learning] | 30 |
| **Unit 4 (de 4): Proposal for the urban planning and public space design in the transport hub surroundings** | |
| **Activities** | **Hours** |
| Class Attendance (theory) [PRESENCIAL][Project/Problem Based Learning (PBL)] | 4 |

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|---|---|
| Class Attendance (practical) [PRESENCIAL][project-based learning] | 8 |
| Project or Topic Presentations [PRESENCIAL][project-based learning] | .5 |
| Writing of reports or projects [AUTÓNOMA][project-based learning] | 30 |

| **Global activity** | |
|---|---|
| **Activities** | **hours** |
| Class Attendance (practical) [PRESENCIAL][project-based learning] | 29 |
| Project or Topic Presentations [PRESENCIAL][project-based learning] | 4 |
| Writing of reports or projects [AUTÓNOMA][project-based learning] | 105 |
| Class Attendance (theory) [PRESENCIAL][Project/Problem Based Learning (PBL)] | 12 |
| **Total horas:** | 150 |

## 10. Bibliography and Sources


| Author(s) | Title/Link | Publishing house | Citv | ISBN | Year | Description |
|---|---|---|---|---|---|---|
| Aguilar Civera, Inmaculada | El territorio como proyecto: transporte, obras públicas y or | Conselleria d'Obres Públiques, Urbanisme i Transpo | | 84-482-3534-7 | 2003 | |
| Bertolini, Luca | Cities on rails: the redevelopment of railway station areas | E & FN Spon | | 0-419-22760-1 | 0 | |
| Santos y Ganges, Luis1962 | Urbanismo y ferrocarril: la construcción del espacio ferrovi | Fundación de los Ferrocarriles Españoles | | 978-84-89649-02-6 | 2007 | |
| Aguilar Civera, Inmaculada | La estación de ferrocarril: puerta de la ciudad | Generalitat, Consellería de Cultura, Educación y C | | 84-7579-630-3 (o.c.) | 1988 | |